



Team-Based Virtual International Interactions in STEM Courses  
Interface - *Better Together: Unstoppable Student Teams*  
*April 14-15, 2021*

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Physiology and Kinesiology  
College of Health and Human Performance  
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# Classes I teach... [hard science courses]

- APK 2105c Applied Human **Physiology** with Laboratory (>260 students)
- APK 3200 **Motor Learning** (1-2 sections of up to 50 students)
- APK 4115 **Neuromuscular** Aspects of **Exercise** (1-2 sections of 50 students)
- PET 5936 Applied **Data Science & Analytics** in Human Performance (online, 1-2 sections of up to 25 students)
- HLP 6535 Graduate **Research Methods** (online, 1-2 sections of up to 25 students)

# Creating Global Communities in Undergraduate STEM

- Applied Physiology and Kinesiology Department
  - APK 4115: *Neuromuscular Aspects of Exercise*

## *Goals*

- Create an internationalized curriculum in my classroom
  - Imperative for development of skills across different intellectual domains
    - Lacking with the trend toward STEM degrees over other subjects
- Teach the relevant physiological content
  - Pre-professional
- Develop professional skills
  - Integrate global dimensions to prepare students to perform in an international and multicultural context
  - Pre-internship

*The National  
Academies of* | SCIENCES  
ENGINEERING  
MEDICINE



PLoS One. 2016 Aug 2;11(8):e0159593. doi: 10.1371/journal.pone.0159593. eCollection 2016.

### Shared Genetic Factors Involved in Celiac Disease, Type 2 Diabetes and Anorexia Nervosa Suggest Common Molecular Pathways for Chronic Diseases.

Mostlowy J<sup>1</sup>, Montén C<sup>2</sup>, Gudjonsdottir AH<sup>3</sup>, Arnell H<sup>4</sup>, Browaldh L<sup>5</sup>, Nilsson S<sup>6</sup>, Agardh D<sup>2</sup>, Torinsson Naluai A<sup>1</sup>.

Author information

**Abstract**

**BACKGROUND AND OBJECTIVES:** Genome-wide association studies (GWAS) have identified several genetic regions involved in immune-regulatory mechanisms to be associated with celiac disease. Previous GWAS also revealed an over-representation of genes involved in type 2 diabetes and anorexia nervosa associated with celiac disease, suggesting involvement of common metabolic pathways for development of these chronic diseases. The aim of this study was to extend these previous analyses to study the gene expression in the gut from children with active celiac disease.

**MATERIAL AND METHODS:** Thirty six target genes involved in type 2 diabetes and four genes associated with anorexia nervosa were investigated for gene expression in small intestinal biopsies from 144 children with celiac disease at median (range) age of 7.4 years (1.6-17.8) and from 154 disease controls at a median (range) age 11.4 years (1.4-18.3).

**RESULTS:** A total of eleven of genes were differently expressed in celiac patients compared with disease controls of which CD36, CD38, FOXP1, SELL, PPARA, PPARG, AGT previously associated with type 2 diabetes and AKAP6, NTNG1 with anorexia nervosa remained significant after correction for multiple testing.

**CONCLUSION:** Shared genetic factors involved in celiac disease, type 2 diabetes and anorexia nervosa suggest common underlying molecular pathways for these diseases.

PMID: 27483138 DOI: 10.1371/journal.pone.0159593



peer-reviewed  
classmates by



## Employee Performance Review

Employee Information

Employee Name	Employee ID
Job Title	Date
Department	Manager
Review period	

Ratings

	1 = Poor	2 = Fair	3 = Satisfactory	4 = Good	5 = Excellent
Job Knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments					
Work Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments					
Attendance/Punctuality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments					
Productivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments					
Communication/Listening Skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments					
Dependability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments					
Overall Rating (average the rating numbers above)					





# The Assignment

- Presentation summarizing the paper
- Engaging interactive component
  - Demo
  - Class questions
- Develop questions for researcher
  - Paper and science
  - Cultural background; academia abroad
  - Career pathway
  - Advice to students
- Contacting and interviewing the researcher
  - Virtual with video and audio
  - Written out script Q/A
  - Demonstration of protocol and devices/instruments used





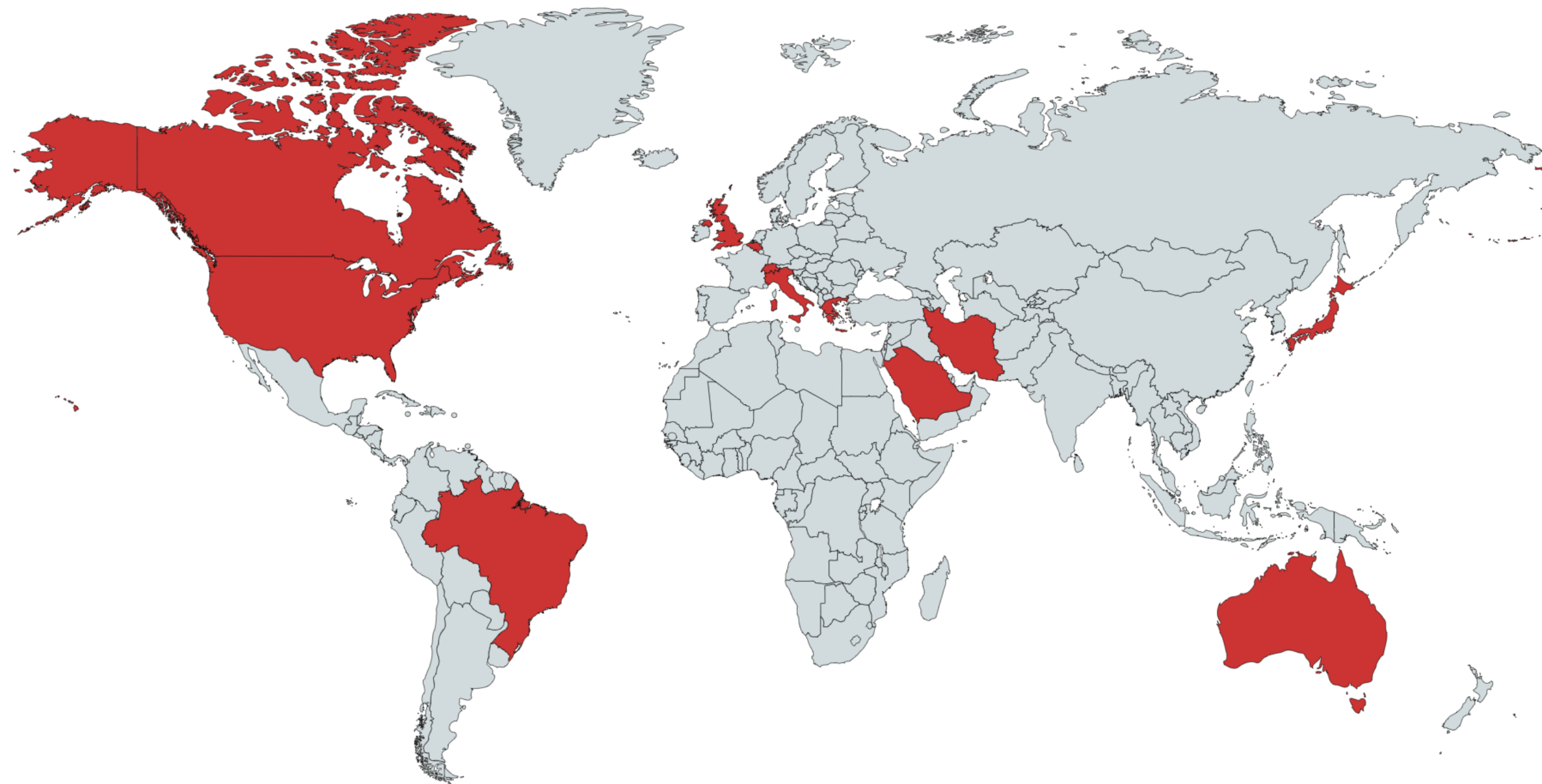


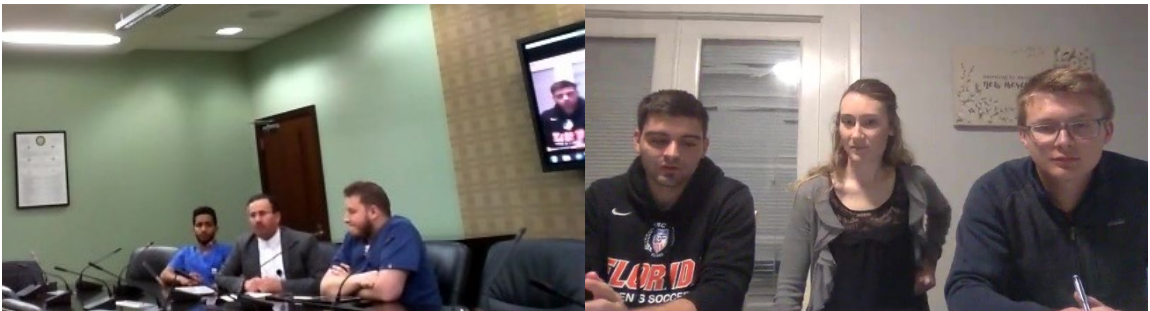
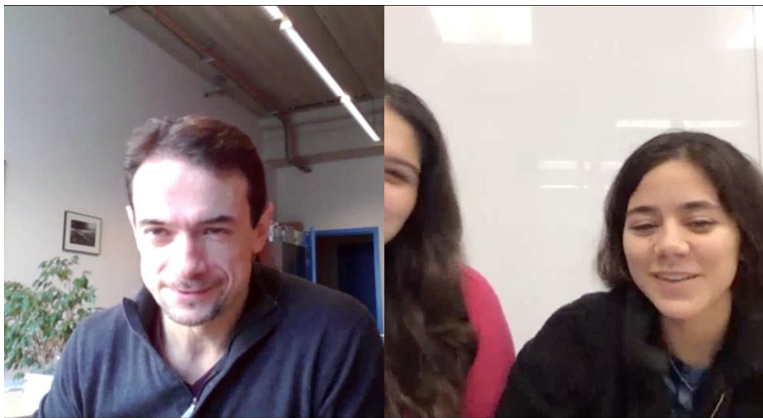
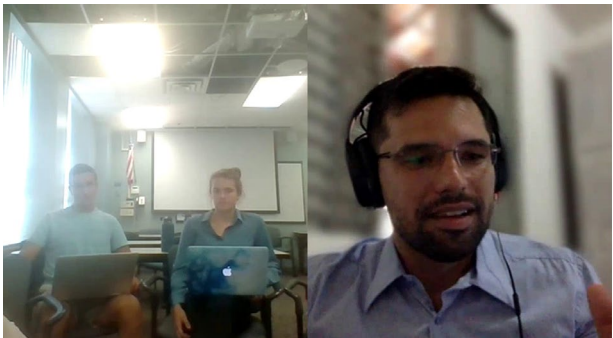
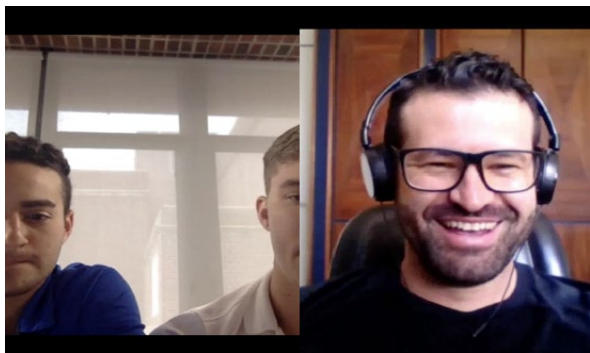
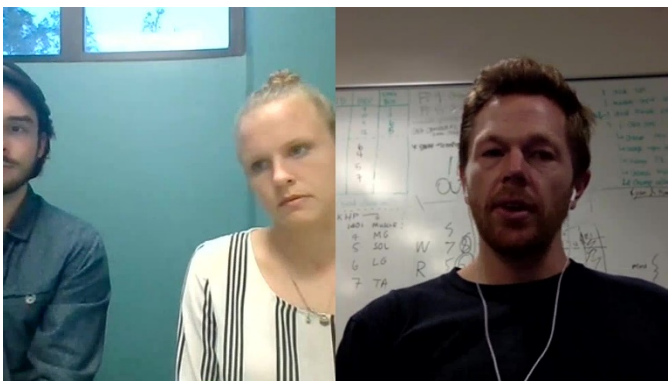
# qualtrics<sup>XM</sup>

- FA 2019 (MWF 3-3:50 PM)
  - 44 students
  - 11 countries
  - *In-person*
- SP 2020 (MWF 7:25-8:15 AM)
  - 50 students
  - 13 countries
  - *Partially online (COVID-19)*
- FA 2020 (MWF, AM and PM)
  - >100 students
  - 23 countries
  - *Fully online*

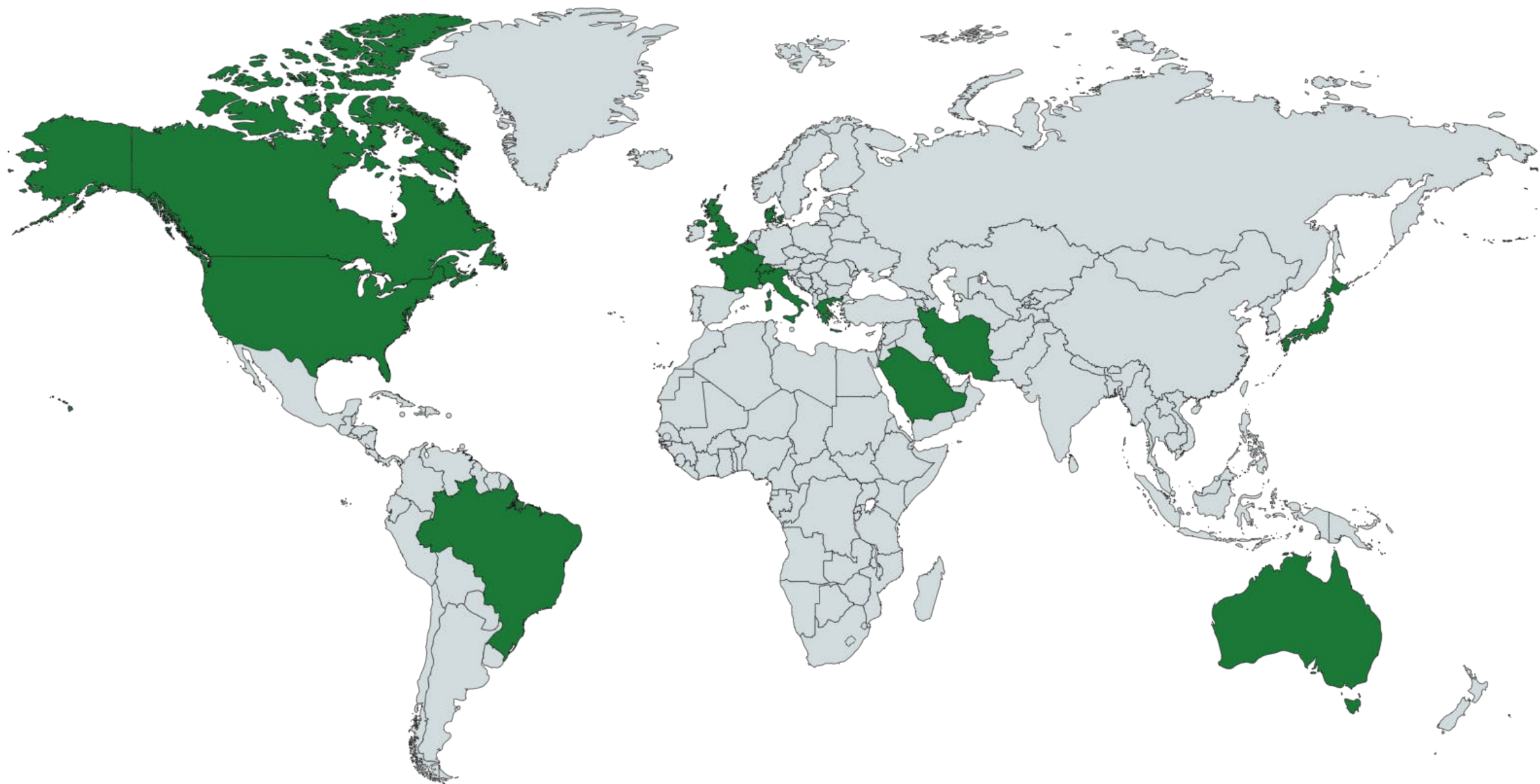










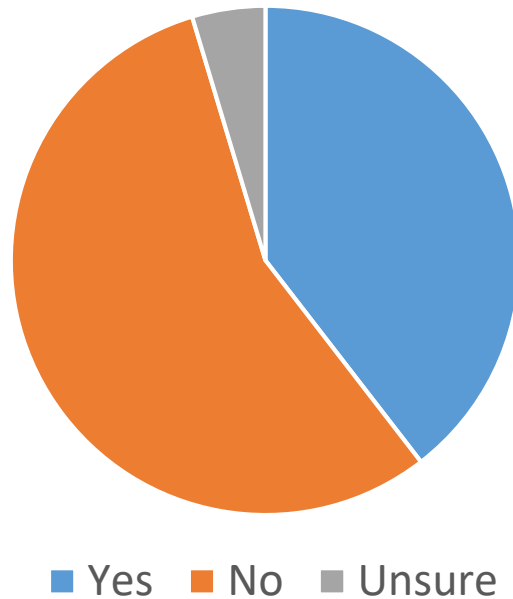






# Background

Do you speak a language other than American English?

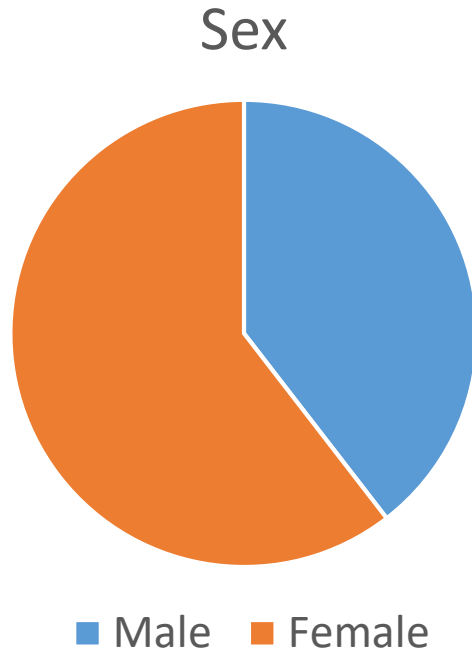


- Native-speakers: 23% (60% Spanish)
- Non-native speakers: 5% (100% Spanish)

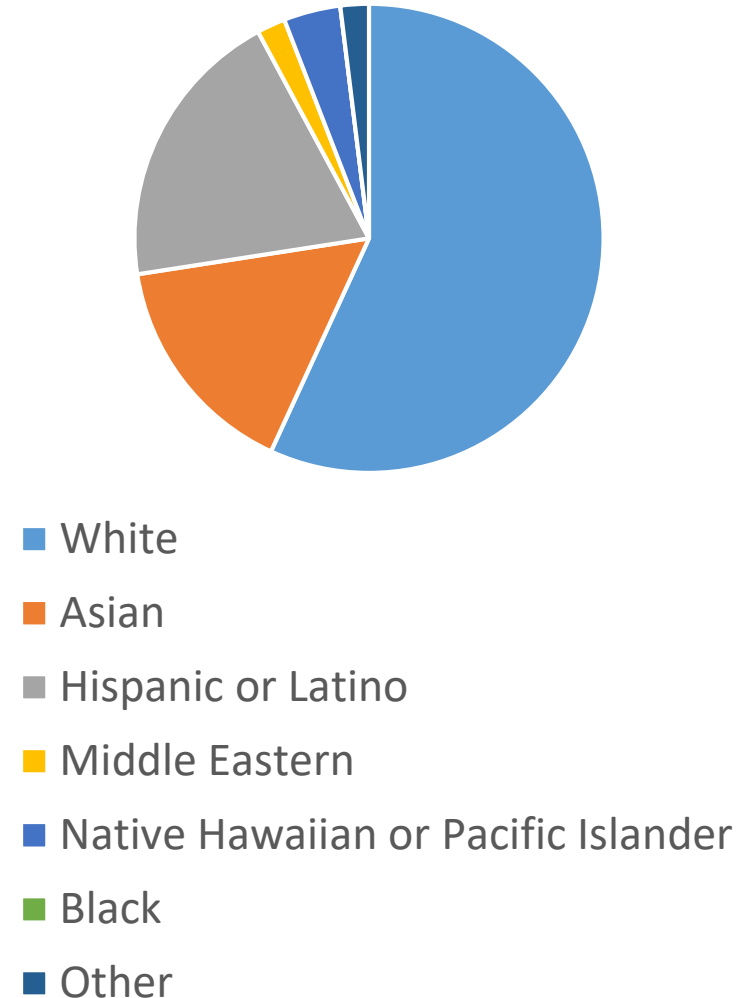


# Identity

- Sex/gender
- Ethnic identification identified two generations back



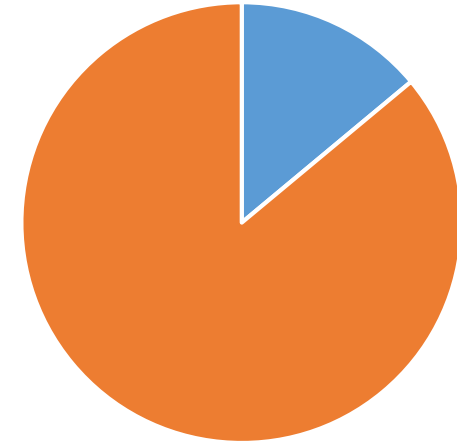
How do you identify?



# Travel Abroad

- About 14% of students had never traveled abroad
  - The most cited reason was “too expensive” and “too busy”
  - All but one student said they would “definitely” travel abroad in the present or future, if they could
- Of the 86% who had traveled abroad, most said they would “definitely” travel abroad again

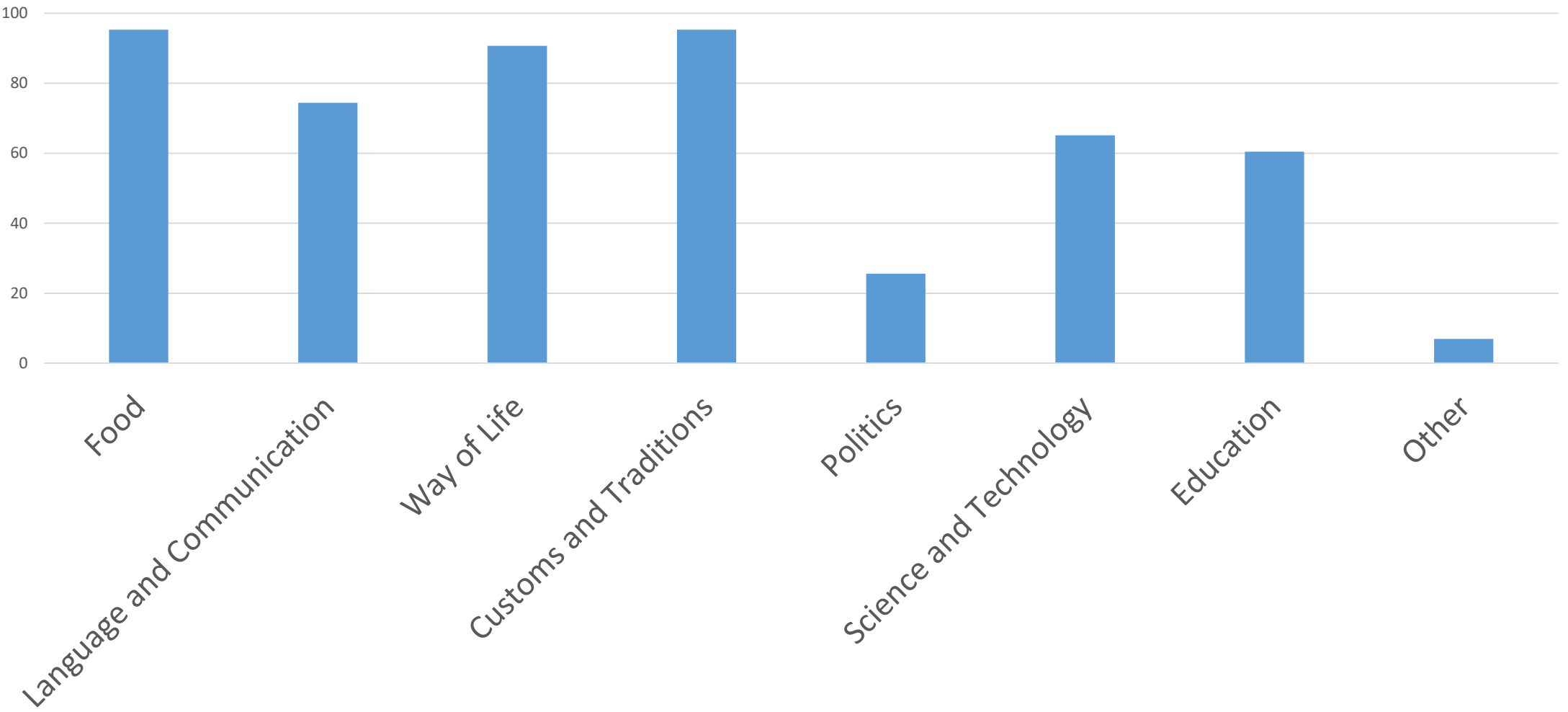
Have you traveled outside the U.S. or Mexico?



■ Never Traveled Abroad ■ Traveled Abroad

# Cultural Interest

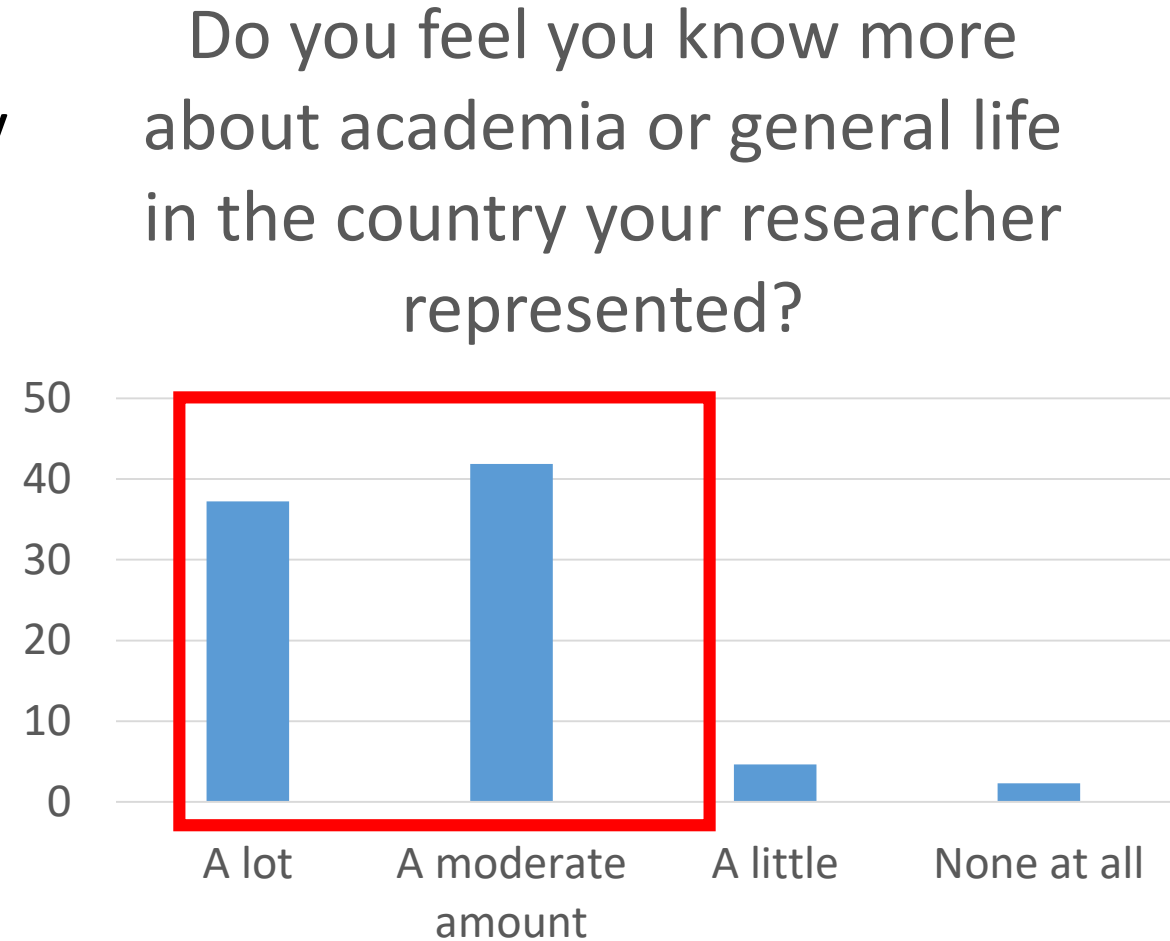
What intrigues you about other cultures?



## Evaluating the Interviews

- Do you think the interview successfully added an aspect on culture and internationalism to our course?
  - Definitely yes (79%)
  - Probably yes (21%)

Most (79%) said  
a moderate  
amount or a lot



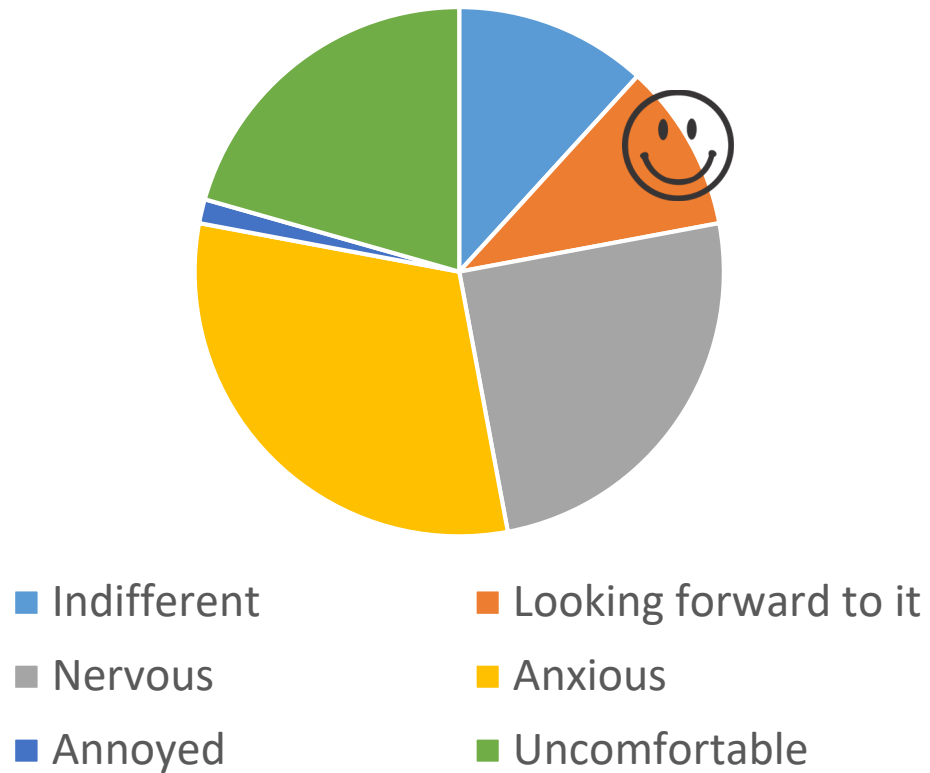
# Impact

- How did your experience with the researcher from another country impact you?
  - A lot of positive impact, growth or “slightly positive impact, growth (~90%)
    - Self-confidence
    - Teamwork
    - Independent work
    - Worldview
    - Personal cultural values and biases
    - Interactions with people from different cultures
    - Respect for other cultural, political, and/or economic systems
    - Recognition of academia/research around the world
    - Adaptability
    - Communication with peers
    - Communication with someone from another culture

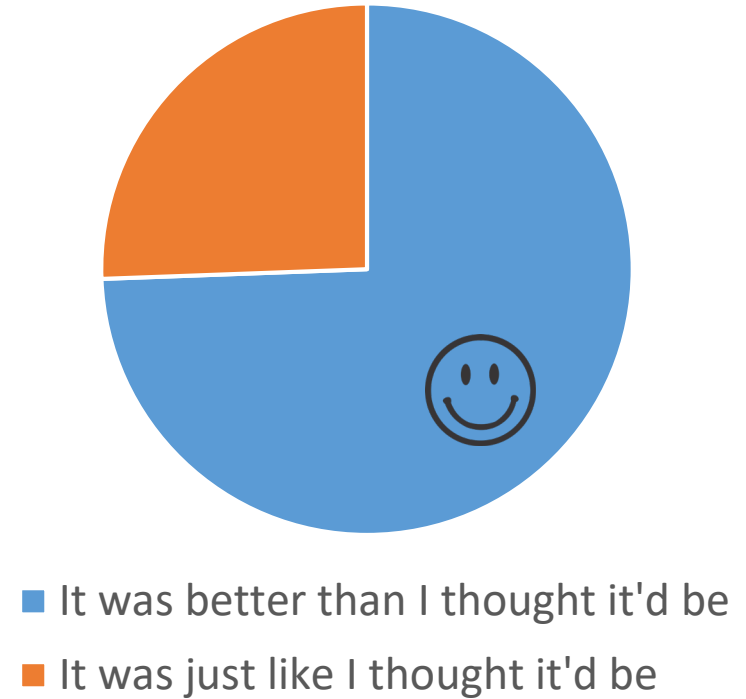


# Feelings about group presentations...

Before



After





# Rewarding but not without Challenges

- Tips for incorporating student teams in STEM at a global level:
  - Start small
    - One VE shared by an entire classes versus a separate VE for each student
  - Preparation is key
  - Put more of the workload on the students
    - Scaffolded assignments
    - Teach search engine skills
  - Select asynchronous over synchronous

# Take-Home

It is possible to enhance the student learning experience in STEM classrooms by incorporating internationalization through team-based presentations.

This was successfully demonstrated in the UF APK *Neuromuscular Aspects of Exercise* course conducted over multiple semesters in an in-person, hybrid, and fully online course setting.



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